Waste Stabilization Ponds in the District Municipality of Muskoka

1976

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of the
Environment

Ontario

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INTRODUCTION

This report contains a brief summary of the history, characteristics, condition and recommendations for improvements to the waste stabilization ponds or sewage lagoons at resorts and commercial establishments in Muskoka.

It is an update of an earlier report (1970) prepared by the Ontario Water Resources Commission.

DOMESTIC SEWAGE TREATMENT BY WASTE STABILIZATION PONDS

I GENERAL:

Waste Stabilization Ponds (lagoons) which are properly designed, constructed and operated are very efficient in producing an effluent of high chemical and bacteriological quality. This fact is often overlooked due to the relative simplicity of the design and operational procedure compared to a sophisticated sewage treatment plant. For operations with low sewage volumes, sufficient available land, and unskilled operators, the waste stabilization pond method of sewage treatment is satisfactory.

The normal effluent guideline for a sewage treatment system as required by the Ministry of the Environment is:

BOD_5 - 15/mg/1
S.S. - 15/mg/1
Total Phosphorus- 1/mg/1

To obtain an effluent of this quality, two removal aspects must be considered in the design and operation of a sewage treatment system. First, in order to reduce the BOD_5 and Suspended Solids to the 15 mg/l guideline, organic reduction or removal must occur. Secondly, a means of nutrient removal must be employed to lower the total phosphorus content to 1 mg/l.

II ORGANIC REDUCTION:

The principle of the Waste Stabilization Pond operation is the retention of sewage for a period of time, during which it is subjected to natural biodegradation prior to final disposal.

Raw domestic sewage consists mainly of organic compounds which are reduced to simpler compounds through the combined action of wind, sunlight, temperature, sedimentation, bacteria and algae. Bacteria are naturally present in high concentrations and feed on the organic matter, converting it into soluble nutrients, an ideal food supply for algae which grows prolifically in sewage.

In the presence of sunlight, algae releases large quantities of oxygen which is utilized by bacteria during its life cycle.

The reduction of sewage into simple compounds is greatest during spring, summer and fall when conditions are ideal for the existence and reproduction of bacteria and algae.

During winter, the purification process diminishes with the decrease in wind action, sunlight and temperature. Gradually, the oxygen-dependent bacteria decrease and are replaced by bacteria which are able to continue the purification process with little or no available oxygen, but at a slower rate. Eventually, the bacteria consume nearly the entire food supply and gradually die, resulting in a satisfactory effluent, low in organic matter and bacteria. The degree of reduction of organic matter can be as high as 90% and for bacteria, as high as 99%.

The natural treatment process provides little phosphorus reduction, a key nutrient which if released to a water course may cause excessive plant growth and premature eutrophication of lakes.

III PHOSPHORUS REMOVAL:

A. The Batch Chemical Treatment Process:

The batch chemical treatment method of phosphorus reduction was first introduced in the Muskoka Lakes region during 1973. A chemical coagulant such as aluminum sulphate (alum) is applied to the lagoon contents using a small boat and motor. The alum solution is evenly distributed and mixed into the lagoon contents by the turbulence from the propellor. The chemical addition causes the fine particles of suspended matter including bacteria and algae to clump together into a floc which settles to the lagoon bottom. In addition, the alum also combines chemically with the phosphorus to produce an insoluble phosphorus compound which settles out with the floc.

The result is a crystal clear effluent which is syphoned off to the receiving water.

This method of treatment combined with the natural purification process, normally reduces the organic matter, phosphorus and bacteria by as much as 95%. Many Waste Stabilization Ponds in the District of Muskoka use this method of nutrient control with successful results.

B. Spray Irrigation Systems:

Where sufficient land is available, nutrient control may be obtained by disposal of the effluent by spray irrigation.

Effluent sprayed on land is treated through evapotranspiration, absorption by the soil, and evaporation. As the effluent seeps into the soil it is absorbed by the plant roots. The nutrients mainly phosphorus and nitrogen, are taken up by plants since they are excellent fertilizers. Much of the liquid is given off by the plants in a process called evapotranspiration; the remainder of the effluent evaporates directly from the surface to the atmosphere. In order to maintain the efficiency of the spray area, the vegetation, generally forage crops, must be cut, and removed from the area. If this is not done, the tall grass will die and subsequent matting could cause ponding and run-off of sprayed effluent.

The basis of the spray irrigation system is to distribute the effluent onto the ground so that the plant cover will use the effluent for growth. Evaporation of some of the effluent by wind and sunlight assists in the disposal.

In operating a spray disposal system, the spray area is designed for a maximum effluent application rate of 5,000 gallons per acre per day with approximately 100 days of spray time available in a normal year in the Muskoka area.

Exceeding the design rate during a wet year may cause ponding and effluent run-off to a watercourse.

The operation of a spray irrigation system requires daily operator attention. The lagoon contents may be sprayed 30 days after the last addition of raw sewage. A properly designed lagoon should have sufficient holding capacity in the event of a wet year.

High pressure spray systems tend to produce a fine mist which drifts great distances when sprayed; therefore, the spray area location should be remote from other property and also about 100 feet from highways, as the mist could cause fog or icy road conditions.

TOWN OF BRACEBRIDGE

BANGOR LODGE LTD.

GENERAL:

Bangor Lodge is located on Lake Muskoka about two miles west of the Town of Bracebridge, off Highway 118 on Golden Beach Road, Lot 12, Concession IV, Monck Ward.

The lodge is normally open from June 24th, until Labour Day weekend and accommodates 275 persons.

SEWAGE DISPOSAL FACILITIES:

Bangor Lodge originally operated with a septic tank and tile bed system. The tile bed failed in 1966 and a consulting engineer was retained to design a new sewage treatment facility.

The lodge received approval in May, 1967 for the construction of a 0.86 acre seasonal retention lagoon with discharge to Lake Muskoka (approval #67-A-396).

The sewage from the lodge flows by gravity through a 2" diameter line into a septic tank and by gravity through a 3" diameter line to the lagoon. The lagoon has a design capacity of 1.2 million Imperial gallons.

The cell is constructed in a kidney shape for aesthetic reasons, and blends in with the adjacent golf course.

It is fenced and a locked access gate is provided.

EXISTING CONDITION:

The lagoon was approved on a seasonal retention basis with an effluent discharge to Lake Muskoka. Since the operation of the lagoon started in 1967, there has not been a direct discharge to Lake Muskoka. The effluent has been dispersed onto surrounding fields and allowed to seep into the ground.

In the past, Ontario Water Resources Commission staff recommended spray irrigation of the effluent onto the golf course to control the amount of nutrients entering recreational waters. The owner indicates that he intends to spray the lagoon contents onto the golf course; however, at the time of this report, spray irrigation equipment has not been purchased.

SUMMARY:

Although the sewage treatment facility was approved on a seasonal discharge basis, it may be converted to a land disposal system. A total spray area of 180 acres is available. This includes the golf course and adjacent fields.

RECOMMENDATIONS:

1. The spray irrigation system should be completed and operational during the 1976 season.

2. The system should be certified as a spray irrigation system.

CANADA FOILS LIMITED

GENERAL:

The Canada Foils Strip Casting Plant is located on Lot 1, Concession XII, Draper Ward within the Town of Bracebridge. This is approximately 2 miles south of the townsite of Bracebridge and just east of former Highway 532. The facilities have been designed to handle the domestic sewage from 100 employees on a year round basis.

SEWAGE DISPOSAL FACILITIES:

Canada Foils Limited received Ontario Water Resources Commission approval (#3-0199-68-006) for the construction of a 0.76 acre seasonal retention, two celled lagoon on May 1st, 1968. Special terms and conditions of the approval state that the lagoon must not be discharged to the South Branch of the Muskoka River during the recreational period of May 15th to September 30th. Prior to discharge, all contents are batch chemically treated.

EXISTING CONDITIONS:

Presently 100 persons work at Canada Foils Limited. Although it opened November, 1968, it was not necessary to discharge until November, 1973. This observation suggests that percolation into the sub-soil was occurring. As a result, test holes were drilled. The groundwater table had not been reached at a depth of 27 feet so that percolation will not likely cause groundwater contamination.

The lagoons were well constructed, with excellent fencing and access control. Some maintenance will be required to insure continued good operation.

SUMMARY:

The Canada Foils Ltd. two celled seasonal retention lagoon with the batch chemical method of treatment is a well operated system.

RECOMMENDATIONS:

A few minor maintenance improvements are suggested. These include muskrat removal to insure berm stability, cattail removal to discourage the presence of muskrats, improved berm vegetation maintenance, and minimal maintenance work on the access road.

CAMP OAK-A-LEA

GENERAL:

Camp Oak-A-Lea is located on Lot 11, Concession IX, Oakley Ward. It is situated on Clear Lake and is normally open in July and August. It accommodates about 133 persons.

SEWAGE DISPOSAL FACILITIES:

The Boys Camp opened in 1965. The sewage system consists of a series of septic tanks with the effluent being pumped to a single cell lagoon. The lagoon is located about 400 yards from the main camp in a wooded area.

EXISTING CONDITION:

The lagoon was constructed in 1965 and operates with a spring discharge to Saw Lake.

The lagoon was constructed in a natural, low area, and because of the rock formation, is irregularly shaped. It is sided by a steep rock outcropping which forms one berm and a rock slope on another side forming the berm and bottom. Both ends of the lagoon are constructed of earth material. Vegetation around the lagoon is not maintained and there is no access road.

The berms appear stable; however, they require proper grading and sloping. Surface runoff into the lagoon is apparent and its effect on the cell capacity is unknown due to a possible seepage problem.

SUMMARY:

Observations of the existing sewage treatment facility during 1975 indicated seepage from the cell may be occuring, possibly from the pervious end berms from fissures in the rock cell bottom.

The owner proposes an additional 25 tent and 25 trailer sites on the system, served by a central washroom. The additional development is dependent on further evaluation of the sewage system.

RECOMMENDATIONS:

1. Nutrient control by batch chemical treatment will be required prior to a controlled discharge to Saw Lake.

2. The extent of seepage must be determined.

3. Drainage ditches around the lagoon should be improved to divert surface runoff.

4. A survey of the sewage system should be conducted to determine the volume of the lagoon.

5. A flow meter or pump timer should be installed to measure sewage flows.

CAMP KOHAI

GENERAL:

Camp Kohai, formerly known as Camp Tamarack is located on Lot 22, Concession VI, Macaulay Ward, Town of Bracebridge. It is situated near Stoneleigh Lake and operates for 8 weeks during the summer and accommodates approximately 75 persons.

SEWAGE DISPOSAL FACILITIES:

Camp Tamarack opened around 1938 using outdoor privies which were later replaced by a septic tank and tile field system.

In 1965, a small two cell lagoon system was constructed operating on a seasonal retention basis with a fall effluent discharge toward Stoneleigh Lake. Three tile beds are still in operation; however, the remainder of the septic tank effluent is pumped through a 2 inch buried PVC forcemain to either of the two cells.

EXISTING CONDITION:

The sewage treatment facility was constructed in rough rocky terrain in an area of difficult access.

The lagoon effluent was discharged overland through approximately ½ mile of forested land; consequently, it is unlikely that the effluent reaches Stoneleigh Lake.

The cells are irregularly shaped, with uneven bottom contours. This condition and the absence of an access road imposes difficulties in effecting nutrient control by chemical treatment.

In 1975, Ministry staff approved an experimental effluent disposal system using a 1 inch diameter perforated pipe.

SUMMARY:

The small two cell lagoon system appears stable and is located remote from the Camp and watercourses.

A system of small diameter perforated pipe will be used during the 1976 operating season to evenly disperse effluent throughout the forested area. This will minimize localized ground saturation which could lead to ponding and runoff.

RECOMMENDATION:

The lagoon and effluent disposal operation should be monitored and evaluated during the 1976 operating season.

TOWN OF GRAVENHURST

BALMORAL LODGE NURSING HOME

GENERAL:

Balmoral Lodge Nursing Home is located on part of Lot 28, Concession VII, Morrison Ward, Town of Gravenhurst. It is situated on Sparrow Lake and accommodates 50 persons on a year round basis.

SEWAGE DISPOSAL FACILITIES:

The nursing home was built in 1969 and operated with a septic tank and tile bed system. The tile bed system failed in 1970 because of unsuitable soil conditions.

The owner retained a consulting engineer to design a new treatment facility. The consultant proposed a one cell lagoon with effluent disposal by the ridge and furrow method. For a time, the sewage wastes were transported to the Gravenhurst sewage treatment plant.

Approval was granted on February 4, 1971, (#3-1017-70-716) for a 1.8 acre lagoon located about 2100 feet east of Sparrow Lake. The lagoon effluent was to have final disposal by ridge and furrow to prevent a discharge to the lake. A condition of approval states a proper spray irrigation system should be installed if the ridge and furrow method does not prove satisfactory.

EXISTING CONDITION:

The lagoon started operation in June, 1971. A soil consultant conducted a feasibility study on the ridge and furrow method as a means of effluent disposal. The study concluded this method was not particularly suited to the 30 acre disposal area because of soil conditions and a high water table.

Ontario Water Resources Commission staff were pessimistic about this method of effluent disposal; however, they thought it would be suitable, provided careful construction techniques under proper supervision were observed. Unfortunately, the owner did not construct the effluent disposal system according to the approved design.

The present system includes 1,500 feet of buried perforated pipes located adjacent to a swamp area. During the summer, it was noted that effluent ponded adjacent to the perforated pipe and gained access to the swamp area. A series of ditches were constructed between the lagoon and McLean's Bay on Sparrow Lake, to intercept any effluent or surface water run-off.

Since the land disposal system was not constructed to approved design, it could not be relied on to prevent a nutrient discharge to Sparrow Lake.

The Ministry issued approval (#3-1412-746) on February 1, 1974 for the construction of nutrient removal facilities consisting of the addition of aluminum sulphate to the raw sewage in the pumping station. The treated lagoon effluent is discharged annually to the 30 acre disposal area. Samples of the raw sewage and lagoon contents indicated that 50 per cent phosphorus removal was being achieved.

Alum addition in the raw sewage is effective in controlling phosphorus; however, the one cell operation with continuous inflow of raw sewage creates some problems. Settled sewage floc eventually re-suspends, producing a chemically and bacteriologically inferior quality effluent. A two cell operation should be considered with seasonal discharge.

The owner proposes an increase in the Nursing Home accommodation to a total of 100 persons on a year round basis. An application will be required by this Ministry for approval of any alterations and extensions to the existing sewage treatment facility.

SUMMARY:

The existing lagoon system has eliminated the use of inadequate septic tanks and tile beds. With the proposed increase in accommodation, additional storage capacity will likely be required. A two cell lagoon system with nutrient removal facilities and seasonal discharge should be considered.

RECOMMENDATIONS:

1. Evaluate the existing lagoon capacity.

2. Alter the layout to provide a two cell facility.

3. Continue monitoring of the ridge and furrow effluent disposal to ensure protection of Sparrow Lake.

BEAVER CREEK CORRECTIONAL CAMP

GENERAL:

Beaver Creek Correctional Camp is located on Lot 3, Concession VI, Muskoka North Ward in the Town of Gravenhurst. The camp is owned and operated on a year-round basis by the Canada Department of the Solicitor General. The total population of the camp is approximately 100 persons.

SEWAGE DISPOSAL FACILITIES:

Initially, the camp was served by a septic tank and tile bed system. However, when difficulties in maintaining a satisfactory tile field were encountered, consideration was given to a sewage lagoon system.

On October 29, 1964, a 1.23 acre lagoon cell with an effluent discharge to Beaver Creek received Ontario Water Resources Commission approval (#64-A-286). A second 0.92 acre lagoon located adjacent to the initial cell received Ministry approval (#3-0130-72-006) on April 14, 1972. Special terms and conditions on this approval required discharge of the effluent by irrigation on adjoining lands.

EXISTING CONDITIONS:

The majority of the domestic sewage flows by gravity to the lagoon system. A septic tank and tile bed system serve a maximum staff of 18 persons. During late 1975, new storm and sanitary sewers were installed. New kitchen facilities were also constructed during 1975 and within five years, all existing buildings will be replaced and the new buildings connected to the sanitary sewer system. The use of the septic tank and tile bed system will be phased out.

Both lagoon cells are well constructed; excellent fencing is provided.

Spray irrigation of the effluent was delayed until August in 1975 due to repeated transformer failures. The problem was rectified and the spray irrigation system operated satisfactorily for the balance of the season.

The spray area is excellent, consisting of sandy soil with a mixture of small pine trees and grass cover. The grass is maintained using a rotary mower which grinds the vegetation to mulch.

SUMMARY:

The main part of the original septic system was replaced by a single cell lagoon in 1964 with discharge to Beaver Creek. In 1973, a second cell was constructed and the system converted to spray irrigation. However, effluent was not sprayed until August 1975 due to transformer problems.

RECOMMENDATIONS:

None.

MUSKOKA SANDS INN

GENERAL:

Muskoka Sands Inn is located on Lots 15 and 16, Concession VII, Muskoka South Ward, about four miles north of the Town of Gravenhurst.

The Inn is situated on the eastern shore of Lake Muskoka and is open year round accommodating a maximum of 200 persons.

SEWAGE DISPOSAL FACILITIES:

The Inn opened around 1960 and operated with a septic tank and tile bed system. This system failed shortly after installation.

Muskoka Sands Inn retained a consulting engineer to design a proper sewage treatment facility. A two cell seasonal retention lagoon system with spring and/or fall effluent discharge to Lake Muskoka received approval June 6, 1963 (#63-2-406).

The existing system consists of two pumping chambers. One pumping chamber is located in the boat house and collects domestic waste by gravity from one cottage and the snack bar. This pumping chamber is located in the water, and although dye tests indicate there is no leakage from the chamber, it presents a hazard should pump failure occur.

The second pumping chamber is located midway along the entrance road beside a small watercourse which flows into Lake Muskoka. This chamber collects all waste from the Inn, and the waste from the pumping chamber in the boat house. A calibrated pump timer records the quantity of waste water pumped to the lagoon through a buried forcemain.

EXISTING CONDITION:

Since construction of the treatment facility, a number of problems have occurred.

1. The main pump has failed several times, resulting in some wastewater overflowing to the small creek and into Lake Muskoka. A pumpout truck hauled the waste away while the pump was repaired.

   During the most recent main pump failure, a portable 8 horsepower gasoline pump was rented and prevented an overflow to the creek. Problems of overheating indicate a larger capacity pump is required.

   The owner has been asked to have a stand-by pump available on-site.

2. The lagoon was constructed in the path of a natural watercourse which drains the area east of the lagoon.

   The easterly berm was constructed on flat rock. Most of the surface run-off is diverted around the cell; however, a significant amount apparently enters the cells. This situation was partly resolved by the construction of a temporary ditch.

3. Since 1968, the hydraulic capacity of the lagoon system has been questioned. A calibrated pump timer indicates that the actual sewage flow considerably exceeds the design flow. This, plus the substantial amount of surface run-off into the lagoon system, indicates the capacity of the two cells is insufficient.

The owners retained a consulting engineer to design additional lagoon capacity to provide a total capacity of approximately 3.0 million gallons.

Ministry approval (#3-1111-74-756) for extensions to the existing lagoon system was granted on July 17, 1975.

Construction of the third cell commenced in early August, 1975; unfortunately, work ceased prior to completion and was not started again during the construction season.

Completion of the new storage facility is expected in 1976.

The existing two cells and the addition will serve the present Inn population only. The new system will operate on a seasonal retention basis with controlled discharge of chemically treated effluent to Lake Muskoka.

SUMMARY:

The lagoon extension will provide additional capacity enabling total retention of the wastewater from May 15 to October 1.

The surface run-off problem will be eliminated during construction of the new facilities through asphalt ditching.

RECOMMENDATION:

1. The owner must complete construction of the additional storage capacity in accordance with the approved engineering design to enable proper sewage retention for the 1976 season.

2. The owner must upgrade the existing sewage treatment facility. Auxilary pumps are required. Consideration should be given to an alarm system which would immediately indicate pump failure.

CAMP ROCKWOOD

GENERAL:

Camp Rockwood is located on Sparrow Lake in Morrison Ward, Part Lot 31 & 32, Concession 4, Town of Gravenhurst. It is a boy's camp which is operated during the months of July and August with accommodation for 230 guests and 110 staff.

At present, only four cottages are used on a family cottage basis. The camp itself did not operate in 1975.

SEWAGE DISPOSAL FACILITIES:

The original septic tank and tile field disposal system was replaced by a wet well, forcemain and lagoon operation in 1964 and received O.W.R.C. Approval (#64-A-442) on July 7, 1964. The discharged effluent enters a swamp via an open ditch. The swamp discharges directly to Sparrow Lake.

EXISTING CONDITIONS:

The sewage treatment facility has been used very little since the Camp closed in 1971, so that a discharge to Sparrow Lake has not been required. However, should the Camp re-open in the future, the contents will have to be batch chemically treated for nutrient removal prior to discharge.

Since approval was granted in 1964, proper berm vegetation maintenance and fencing procedures have not been carried out.

RECOMMENDATIONS:

1. As the lagoon still receives sewage from four cottages, regular inspections should continue.

2. The berm vegetation must be maintained.

3. The fence should be repaired.

TOWN OF HUNTSVILLE

HIDDEN VALLEY RESORTS LIMITED

GENERAL:

Hidden Valley Resort is located in Lot 32, Concessions I and II, Chaffey Ward, Town of Huntsville.

It is situated on the northwestern shore of Peninsula Lake and consists of a year round Holiday Inn operation and a public ski chalet used during winter months.

SEWAGE DISPOSAL FACILITIES:

Sewage and wastewater from the Holiday Inn (89 Units) and a public ski chalet flows by gravity into cells 1 and 2 located near Peninsula Lake. The contents of cell 2 are pumped periodically to cell 3 which is located a considerable distance northeast of cell 1 and 2. Cell 3 contents are transferred to cell 4 which acts only as a storage lagoon. The effluent from cell 3 is spray irrigated onto six acres of forested area located adjacent to this cell.

EXISTING CONDITION:

Cells 1 and 2 received approval September 25, 1968, (#3-0734-68-006) on the basis of effluent disposal by spray irrigation. The total design capacity of these cells was 2,132,500 Imperial gallons contained in an area of 1.75 acres.

Both cells 1 and 2 became full during the summer of 1969 before the spray irrigation system had been constructed.

A third cell (No. 3) was constructed during 1969 to retain treated effluent from the filled cells 1 and 2 while a spray irrigation system was constructed. There is no record of approval for cell 3 which has an area of 4.77 acres and a capacity of 7.6 million Imperial gallons.

The berm of cell 3 broke on May 11, 1970 causing a discharge of approximately 2 million gallons of treated effluent to Peninsula Lake.

Approval (#3-0672-70-716) was given on May 14, 1971 for the construction of a 3 acre storage lagoon, (No. 4) and for modifications and enlargements to cell 1 to provide a total lagoon acreage of 9.35 acres together with about 11 acres of spray area. The spray area which was ultimately constructed comprised only 6 acres.

Cell 4 has an area of 2.36 acres and capacity of 7.5 million Imperial gallons. Cell 4, with a maximum depth of 22 feet, was approved as a storage lagoon and not as an operational lagoon.

Spray irrigation of cell 3 contents onto the 6 acre spray area started in the Spring of 1971. The construction of cell 4 was completed during the Summer of 1971.

The four cell spray irrigation system operated satisfactorily until February 4, 1973 when the contents of cell 3 overflowed into cell 4 thereby causing an overtopping of the end berm of cell 4 and a discharge of about 5 million gallons of treated effluent to a watercourse leading to Fairy Lake.

The four cells were again full by the Fall of 1973 and the reserve capacity of the lagoons was insufficient to retain flows generated during the winter months. On November 15, 1973, approximately 4.5 million Imperial gallons of chemically treated effluent was discharged under Ministry supervision from cell 4 to Fairy Lake.

SUMMARY:

The quantity of sewage generated by the existing resort cannot be sprayed on the available six acres of spray area at normal spray rates.

Attempts have been made to acquire additional spray area; however, the owner indicates that suitable land is not available.

Hidden Valley Resorts Limited applied for re-classification of the system to operate on a seasonal retention basis with chemical treatment of the effluent prior to a controlled discharge, as practised by many other resorts.

A hearing before the Environmental Hearing Board was held in September, 1974 to consider this application. The Board recommended against the application, primarily on the basis of insufficient evidence that further spray area could not be obtained. Subsequent to the hearing, the Fairy Lake Cottager's Association obtained a court injunction prohibiting a discharge across the lands through which the discharge route passes.

During the summer of 1975, spraying at a rate in excess of normal application amounts per acre was authorized by the Ministry to ensure sufficient capacity to carry the system through the 1975-76 winter. The injunction prohibiting a treated discharge to Fairy Lake remains in effect.

A second application for re-classification with further evidence and information is being processed and another hearing is likely.

RECOMMENDATIONS:

The future status of the system will likely be determined at an Environmental Hearing Board hearing. The owner must be able to provide more information on the existing operation for that hearing.

ONTARIO PIONEER CAMPS

GENERAL:

Ontario Pioneer Camps consists of three separate camps located on Clearwater Lake, east of the Village of Port Sydney.

The Girl's Camp is located on Lot 31, Concession IV, Stephenson Ward, Town of Huntsville. This camp operates from July to August and accommodates a maximum of 280 persons.

The Boy's Camp is located on Part Lot 31, Concession III, Stephenson Ward, Town of Huntsville. This camp also operates from July to August and accommodates a maximum of 280 persons.

The Junior Camp is located on Lot 32, Concession 2, Stephenson Ward, Town of Huntsville. It is open from July to August and accommodates about 200 persons. It also operates during the winter months, mainly on weekends, with accommodation for about 90 persons.

SEWAGE DISPOSAL FACILITIES:

The camps operated with septic tanks and tile beds since the early 1950's. The tile beds later failed and on the advice of the Health Unit, a one cell lagoon was constructed at each camp.

EXISTING CONDITIONS:

Girl's Camp

Sewage is collected by gravity in a large septic tank. It is then transmitted to the lagoon through a buried forcemain. A portable gasoline auxilary pump is available at the Boy's Camp in event of pump failure.

The lagoon has a capacity of 460,000 Imperial gallons, and has been up-graded during the past. The berms were improved by building up the low sections and the slopes will be seeded for stabilization during 1976.

Drainage ditches have been constructed to divert surface runoff around the cell. The camp has proposed additional improvement work for the 1976 season. The sewage flow will be monitored and daily records maintained. Cattails within the cell will be removed to discourage the presence of muskrats and the berm vegetation will be cut at least once during the operating period.

The lagoon was initially batch chemically treated October 26, 1973 with a controlled discharge to Clearwater Lake.

Boy's Camp

The sewage collection and transmission system is similar to the Girl's Camp.

The lagoon is remote from the camp and has a capacity of 670,000 Imperial gallons. Sewage flow will also be monitored and recorded daily and other improvements proposed for 1976 include additional warning signs, maintaining berm vegetation and improving the access road.

The portable gasoline auxilary pump, which can be used at any of the three camps, is kept at the Boy's Camp Workshop. The pump has a rated capacity of 2,000 gallons/hour. The Boy's Camp Workshop is used year round, and is served by a septic tank and tile bed.

The initial batch chemical treatment took place October 26, 1973 with a controlled discharge to an unnamed watercourse which eventually flows into the Muskoka River.

Junior Camp

Sewage is collected by gravity in two pump chambers which pump directly into the main pump chamber. The sewage may be directed to one of two cells. This provides a suitable arrangement for a year round operation. The upper cell has a capacity of 106,000 Imperial gallons, and the lower cell has a capacity of 480,000 Imperial gallons.

The upper cell was constructed in sandy material; however, seepage from the cell appears minimal and has not caused any problems. Odour problems were encountered during the 1975 operating season, and with the possibility of seepage from the cell, the camp has suggested limited use of this lagoon. Water consumption will be reduced to compensate for the reduction in lagoon capacity. The small cell may be used to receive raw sewage while the larger cell is chemically treated and discharged.

The lower cell is about 14 feet deep at one point; however, this does not appear to affect operation as the average lagoon depth is 4-5 feet.

The two cell system received approval (#3-0271-72-006) on May 29, 1972 for operation on a spray irrigation basis. The equipment was purchased; however, this method of effluent disposal was not used because of the introduction and success of batch chemical treatment.

The camp plans to monitor and record sewage flows, fence the cells, maintain berm vegetation, and post additional warning signs during 1976.

The lagoon contents were initially batch chemically treated May 11, 1974 and discharged to Divine Lake.

SUMMARY:

The operation of each lagoon facility is satisfactory and upon completion of the work proposed by the camp, the sewage treatment facilities will be in excellent condition.

RECOMMENDATIONS:

The camp should proceed with the lagoon up-grading programme for this summer. The system (s) should be certified for seasonal discharge

VOYAGEUR GAS BAR AND RESTAURANT

GENERAL:

The service station and restaurant are located on Lot 4, Concession XIV, Brunel Ward, about three miles south of the Town of Huntsville on Highway 11.

The establishment is open year round. The restaurant has a seating capacity of 67.

SEWAGE DISPOSAL FACILITIES:

All sewage and wastewater from the restaurant operation flows by gravity into a pumping chamber where it is then pumped through a buried forcemain to the lagoon.

The small one cell lagoon was constructed behind the restaurant on a wooded sidehill in 1963.

EXISTING CONDITION:

Since construction of the lagoon, there has been no record of any discharge from the cell, leading to the assumption the cell contents must seep slowly out of the bottom into the subsoil.

Surface runoff problems from the sidehill into the lagoon were rectified by the construction of a drainage ditch around the cell.

Recent observations of the system indicate the presence of an overflow or discharge pipe in the north berm, emitting lagoon effluent down the sidehill into a swamp along Highway 11. The presence of the pipe tends to indicate that the system operates on a discharge basis. The extensive brush and vegetation growth around the lagoon had concealed the pipe during the past.

The overflow pipe has been permanently sealed to determine the hydraulic status of the system.

SUMMARY:

The existing lagoon has received some maintenance by the operator.

Sealing the discharge pipe and observations of the system during the 1975 operating season tend to indicate the cell may be sealing itself, operating on a discharge basis.

RECOMMENDATIONS:

1. Clean the drainage ditches annually.

2. Monitor the lagoon operation. A method of discharging the contents may be required.

CAMP WABANAKI

GENERAL:

Camp Wabanaki is located on Lots 32 & 33, Concession II, Stisted Ward, and Lot 1, Concession II, Chaffey Ward within the Town of Huntsville. It is situated on Lake Vernon and was called Camp Onawaw, prior to its purchase by YW-YMCA in 1970. The Camp operates from May 15 to August 31 and accommodates 175 campers and staff.

SEWAGE DISPOSAL FACILITIES:

The sewage disposal system consists of a one cell lagoon constructed in 1961

The sewage is collected in a wet well and then pumped through a 4" plastic pipe to the lagoon which is situated on an island about 1,500 feet from the nearest building. A small portion of this forcemain runs underwater to reach the island. The lagoon is well constructed and has sufficient capacity to retain the sewage from two years of normal operation.

The lagoon was batch chemically treated in May, 1974, with discharge overland to Lake Vernon. Excellent results were obtained.

EXISTING CONDITIONS:

The sewage treatment facility is well constructed and isolated from nearby buildings.

SUMMARY:

The one cell lagoon with annual batch chemical treatment is satisfactory.

RECOMMENDATIONS:

1. Proper fencing is required to prevent access by children.

2. Ground hogs should be controlled to preclude berm damage.

TOWNSHIP OF LAKE OF BAYS

BIG ISLE DEVELOPMENTS

GENERAL:

Big Isle Development is located on Bigwin Island, Lake of Bays. It consists of 78 condominium units which can be occupied year round.

SEWAGE DISPOSAL FACILITIES:

The original Bigwin Island Hotel, a summer resort, operated with a package sewage treatment plant. As a result of unsatisfactory operation of this system, approval for a 2.2 acre, 2 cell seasonal retention lagoon was given on June 20, 1967 (#67-A-498). The lagoon effluent was discharged to Lake of Bays.

The hotel was sold to Big Isle Enterprises in 1969, and was subsequently converted to a year round condominium operation.

During 1970, the sewage lagoon operation was changed from seasonal discharge to spray irrigation of the effluent onto the golf course. This system received approval December 16, 1971 (#3-1109-71-006).

EXISTING CONDITION:

The sewage lagoon system was approved to handle the present 78 condominium units together with a future number of units not exceeding 53. The two lagoon cells and spray irrigation system have been constructed substantially in accordance with the approval.

Sewage flows by gravity into two 7,000 gallon holding tanks where two electric pumps operating on a float arrangement transfer the sewage through a buried four inch forcemain to either of the two lagoon cells.

During 1974, the lagoon berms were upgraded as recommended, and were seeded during 1975.

A surface runoff or infiltration problem affects the lagoon capacity. A drainage ditch constructed in porous sandy-gravel, on the southerly sides of both cells appears to collect runoff, which then seeps into the cells before the ditch can divert it away from the lagoons. The ditch has been completely re-cut, cleaned out and the gradient increased to improve surface runoff diversion; however, because it is located in permeable soil it is likely that infiltration into the cells will continue.

The spray irrigation system consists of irrigation pipes and a mobile Rain-Train sprinkler which travels on wheels, under water pressure up and down several fairways of the golf course. The spray system is capable of disposing the entire lagoon contents.

The gasoline pump formerly used to pump the effluent to the spray system was replaced by an electric pump during 1975.

SUMMARY:

The sewage disposal system was greatly improved during 1974 and is operating satisfactorily; however, the problem of excess surface runoff or infiltration into the cells has not yet been resolved.

RECOMMENDATION:

1. The reserve capacity of the lagoon system must be established having regard for runoff or infiltration. Sewage flows should be monitored.

LUMINA RESORT

GENERAL:

Lumina Resort is located on Lot 16, Concession VI, Franklin Ward. It is situated on Lake of Bays, and is normally open from mid-June to mid-September, accommodating a maximum of 180 persons.

SEWAGE DISPOSAL FACILITIES:

The resort opened in 1921 with a septic tank and tile bed system. Expansion of the resort led to the construction of a small one cell lagoon in 1963.

The sewage waste flowed into two septic tanks and the effluent was then pumped about 1,000 feet to the lagoon. A second cell was added to the lagoon about three years later, operating in series with the first. The cells were emptied in the Fall of 1966 in order to level the lagoon bottom. The following year, both cells filled and overflowed the berms. This was apparently due to surface runoff entering the system. A drainage ditch was constructed the same year to divert surface runoff.

In 1967, it became apparent that the system was not adequate to serve the resort and the owner was requested to retain an engineer to design a proper sewage treatment facility. A consulting engineer was retained; however, the owner constructed the lagoon according to the consultant's design without formal approval.

EXISTING CONDITIONS:

The new single cell lagoon is located on the top of a hill remote from the resort and Lake of Bays.

All sewage and waste water from the main lodge and cottage is collected in a central pumping station and is pumped to the lagoon through a buried forcemain. A discharge from the cell has not been necessary to-date, indicating the possibility that the lagoon contents must seep out of the lagoon bottom.

SUMMARY:

The present lagoon replaces an inadequate septic tank and tile bed system and a two cell lagoon system.

The lagoon operation is stable at present; however, in time, the cell may seal itself and a discharge will be required.

RECOMMENDATION:

1. The berms should be seeded for stabilization.

2. Should the cell seal itself, a method of discharging the contents will be required.

PLEASURE BAY TRAILER PARK

GENERAL:

Pleasure Bay Trailer Park is located on Lot 17, Concession V, Franklin Ward. It is situated on Lake of Bays and is normally open from June to October. It has 100 camp sites which can accommodate about 350 persons.

SEWAGE DISPOSAL FACILITIES:

The trailer park opened around 1959 and operated with a small one cell lagoon, located in a wooded area about half a mile from the park.

Ontario Water Resources Commission staff inspected the trailer park in 1971 and noted that the cell was well constructed and apparently had never been discharged, indicating the possibility that the lagoon contents must seep out of the lagoon bottom. An effluent disposal system may be required in the future.

EXISTING CONDITION:

All waste water from the trailer park is collected in a septic tank and the effluent is pumped through a 2 inch PVC forcemain to the lagoon.

The forcemain is located in a small seasonal stream which flows about 15 feet from a well, through the trailer park and into the Lake of Bays. The owner was requested to remove the forcemain from the stream as any leakage of sewage from the main would be difficult to detect visually. He has complied with this request.

SUMMARY:

The accumulation of solids could seal the lagoon bottom requiring the development of an effluent disposal system.

RECOMMENDATION:

Monitor the freeboard in the cell to assess the need for controlled discharge.

TOWNSHIP OF MUSKOKA LAKES

ASTON VILLA RESORT

GENERAL:

Aston Villa Resort is located on Lots 18 and 19, Concession VI, Muskoka Ward. It is situated on Lake Muskoka, 6 miles west of the Town of Bracebridge on Highway 118.

It is normally open from June 15 to October 15 and accommodates about 190 persons.

SEWAGE DISPOSAL FACILITIES:

Since 1921, Aston Villa operated with a septic tank and tile bed system which failed a number of years ago. As a result, septic tank effluent was pumped to a wooded area and allowed to seep into the ground.

In 1967, a consulting engineer was retained to design a proper sewage treatment facility. A one cell, 0.45 acre seasonal retention lagoon, with discharge to Lake Muskoka, received approval November 23, 1967 (#67-A-1033).

In 1967, the resort was expanded and a second cell was constructed to handle the additional sewage flow.

During the fall of 1969, poorly compacted earth around the lagoon caused a partial discharge of the contents to Lake Muskoka. The berm was repaired and although this cell did not receive formal approval, it meets present standards.

In 1972, an attempt was made to control the amount of nutrients entering Lake Muskoka from the resort by implementing spray irrigation of the lagoon contents. This method was unsatisfactory because of the lack of suitable spray area.

Aston Villa was the first resort in Muskoka to batch chemically treat the lagoon contents for phosphorus removal in June, 1973. The excellent results of the experimental treatment indicated a successful method of controlling nutrients.

EXISTING CONDITION:

Most of the sewage from the resort enters two wet wells through gravity sewers, and is then pumped through an exposed forcemain to cell 1. When cell 1 is full, cell 2 receives the overflow from a pipe located in the centre dividing berm. The remaining sewage is directed to two tile beds, an arrangement which makes it possible for the owner to reside at the resort year round without having to pump raw sewage into the cells which are chemically treated and discharged in the spring.

Both cells are well constructed, with a fence and warning signs to discourage unauthorized entrance. There is a small surface runoff problem with cell 1 which is located adjacent to a hill. The drainage ditch does not appear to be efficient in diverting runoff away from the cell.

Cells 1 and 2 have a combined capacity estimated at 722,000 Imperial gallons.

SUMMARY:

The lagoon system replaces the malfunctioning tile bed used in the past.

The present installation is adequate to serve the existing resort.

RECOMMENDATIONS:

1. The drainage ditch adjacent to cells should be improved for more efficient surface runoff diversion.

2. The vegetation on the berms should be maintained.

CANADIAN KESWICK CONFERENCE

GENERAL:

Canadian Keswick Conference is located on Lot 29, Concession V and VI, Medora Ward.

It is situated on Conference Bay, Lake Rosseau, and is normally open early June to September 15, accommodating a maximum of 675 persons including staff.

SEWAGE DISPOSAL FACILITIES:

During the past, a combination of old septic tanks and tile beds, plus a one cell, 0.75 acre, seasonal retention lagoon was used for sewage treatment. The lagoon was constructed when a number of the tile beds failed, and retained septic tank effluent prior to its discharge into Conference Bay. The existing 0.75 acre lagoon is well built with a capacity of 604,000 Imperial gallons.

The remaining septic tanks discharged to tile beds of minimal absorption capacity. The Conference retained a consulting engineer in 1974 to design a proper sewage treatment facility to serve the entire establishment.

EXISTING CONDITION:

Canadian Keswick Conference received approval for a 2.7 acre seasonal retention lagoon August 23, 1974. (#3-0434-74-006). Clearing of the site, and construction of the pump chamber and pumphouse was completed during summer, 1975.

Temporary alterations to the approved sewage works permitted the construction of a new cell of 430,000 Imperial gallons capacity, located adjacent to the 0.75 acre cell, providing an existing total lagoon capacity of 880,000 Imperial gallons.

Sewage wastes from cottages along the lakeshore were a major problem and are now pumped to the new cell.

Problems are being encountered with the new pumping station during construction leading to sewage overflows to Lake Rosseau.

The majority of the malfunctioning tile beds were taken out of operation during summer, 1975, with the septic tank effluent being directed to either one of the lagoons.

Canadian Keswick Conference has applied for approval of the new cell which will be used in conjunction with the 2.7 acre and 0.75 acre cells.

SUMMARY:

The completion of the three cell lagoon system will eliminate the use of septic tanks and tile beds which have caused problems in the past.

The three cells will operate on a seasonal retention basis, with chemical treatment of the lagoon contents prior to a controlled discharge into Conference Bay in early spring and/or late fall each year.

The new sewage treatment facility will be considered satisfactory when completed according to the approved design with all areas being served by the lagoon system.

RECOMMENDATIONS:

1. When the system is complete, the Ministry of the Environment will conduct a survey to insure construction in accordance with the approved design.

2. Standby power and pumping facilities are to be checked to insure future overflows do not occur.

CANADIAN KESWICK YOUTH CAMP

GENERAL:

The Canadian Keswick Youth Camp is located on Lot 30, Concession XI, Medora North Ward, near the Village of Minett on Lake Rosseau. The camp operates from the 1st of July to Labour Day weekend and accommodates about 350 persons. Weekend operation continues throughout the winter.

SEWAGE DISPOSAL FACILITIES:

The Camp opened in 1971 and was initially served by a septic tank and tile bed system. It was installed in hard pan clay, below the ground water table, so that it malfunctioned shortly after start up. The Camp was forced to haul the septic tank waste to a disposal site while a consulting engineer was retained to design an approved system.

On November 2, 1972, the Camp received approval (#3-0755-72-006) for a 2.56 acre, two cell seasonal retention lagoon, located about half a mile from the Camp. This system was approved for annual spring discharge to Lake Rosseau. The conditions of approval included annual spring discharge; chemical treatment prior to discharge; and chlorination of effluent if required by the Ministry.

The present system includes a gravity collector sewer system to a wet well with two 100 gallon per minute sewage pumps (one on standby) which discharges to a forcemain to the lagoon. One cell is 0.25 acres and the second is 2.3 acres. This enables raw sewage to be deposited in the small cell while the large cell is being treated and discharged.

EXISTING CONDITION:

Contents of both cells were treated and discharged in November, 1974. Since the access road would not be capable of supporting large loads of chemical during May, a fall discharge was permitted.

The large cell is adjacent to a swamp, raising the possibility of bacterial contamination due to sewage seepage through the berms to the swamp. In the summer of 1974, Ministry staff conducted an extensive bacteriological sampling of the lagoon and swamp contents. The results of the study provided no conclusive evidence that the lagoon had any influence on the swamp.

SUMMARY:

The original septic system that malfunctioned has been replaced by an approved two cell system.

In general the lagoon system is well constructed and operated. As required, both cells are fenced and access is controlled by a locked gate. The berms were seeded in 1973 but the results were only partially successful.

The total lagoon capacity, 2.6 million Imperial gallons, at a 2 foot freeboard measured by Ministry staff during 1974 is adequate for this Camp.

RECOMMENDATIONS:

Reseeding of the berms and regular berm inspection should be carried out to insure the berm stability is not jeopardized.

The access road requires upgrading to enable spring discharge of the lagoons.

CLEVELANDS HOUSE

GENERAL:

Clevelands House Resort is located on Lot 23, Concession II, Medora Ward, on the western shore of Lake Rosseau, near the Village of Minett. The resort operates from about May to October 15, and accommodates a maximum of about 425 persons.

SEWAGE DISPOSAL FACILITIES:

Clevelands House was initially operated with a septic tank and tile bed system. The original system failed and was replaced by a single cell lagoon system preceded by primary sedimentation tanks. This system received Ontario Water Resources Commission approval (#60-A-600) in August 1960.

Sewage flow from the resort is directed through a series of septic tanks and a steel holding tank to the lagoon. In 1971, a small second cell was constructed to enable the conversion from seasonal discharge to spray irrigation.

The nearby golf course was considered as a spray area; however, the unsatisfactory soil and drainage conditions precluded its use. The small cell is now used for retaining sewage during the seasonal chemical treatment and discharge of the larger cell.

EXISTING CONDITION:

Adequate drainage ditches have now been provided around both the cells. The reserve capacity of the lagoon was not sufficient during the 1974 operating season, and with Ministry permission, the berms of the large cell were raised two feet, giving a total capacity of 1.9 million gallons at a three foot freeboard.

SUMMARY:

The lagoon system is operated in a satisfactory manner and the increase in berm height should provide the necessary reserve capacity.

Nutrient removal by batch chemical treatment has been successfully carried out and appears to be a suitable operating method.

RECOMMENDATIONS:

1. A pump timer should be installed on the system to monitor daily sewage flow.

2. The berms should be seeded for stability.

ELGIN HOUSE

GENERAL:

Elgin House is located on part of Lots 20 and 21, Concession IV and V, Township of Muskoka Lakes on Lake Joseph near the Village of Port Sandfield. It is normally open from June 1 to the middle of October with accommodation for about 250 persons.

SEWAGE DISPOSAL FACILITIES:

Elgin House operated with a series of septic tank and tile beds since its opening around 1942. Subsequently, the tile beds failed and the effluent was then pumped to a swamp located about 3/4 of a mile from the main lodge. An earthen berm was constructed on the east side of the swamp to retain the contents during the summer months until it was discharged in both the spring and the fall. During 1972, the berm was raised about 3 feet; however, the soil was not properly compacted and excessive rainfall during the summer caused a berm failure. It was repaired for the 1973 operating season and a consulting engineer was retained to design a proper sewage treatment facility.

The new system was approved on April 20, 1972 (#3-0031-72-006). It was in operation in 1974. Ministry staff determined by field measurement that the total capacity of both cells was 1.5 million Imperial gallons with a two foot freeboard.

Most of the sewage from the resort enters a pumping well via existing gravity sewers while the remainder is fed to the well by forcemain. All of the sewage is then pumped to the lagoons through a four inch diameter forcemain.

Since commencement of operation of the new cells in 1974, some problems have been encountered. In 1974, both cells were full by mid October and subsequent sampling of the contents indicated a very low strength sewage indicating excessive hydraulic overloading. Subsequent investigations indicate that the old collector sewers have been replaced, and ground water infiltration appeared minimal during the 1975 operating season.

The cells themselves were not properly constructed in the first instance. A 15 foot opening in the centre berm for the purpose of moving equipment back and forth was poorly compacted at the conclusion of the job. This subsequently eroded and allowed half of the centre dividing berm to collapse. This was subsequently repaired under Ministry supervision. Additional berm repairs were completed during 1975.

The system is designed to operate on a spray irrigation basis. There is a total of about 100 acres available for spraying; however, a 3 acre site is presently used. A large portable gasoline pump is used to pump effluent to the disposal area. Ministry staff granted permission for a trial use of 1,000 feet of 1¼ inch perforated pipe as a means of effluent distribution over the disposal area. This method requires further evaluation and should it be concluded spray nozzles are superior, that method will be required.

SUMMARY:

A new lagoon system has been constructed and placed in satisfactory operation. The new system, as constructed, has a larger capacity than the design provided for and is adequate for the resort.

RECOMMENDATIONS:

1. A calibrated pump timer should be installed to monitor daily sewage flow. This will allow an evaluation of the decrease in ground water infiltration into the collector system.

2. The method of effluent disposal requires further evaluation.

GLEN ROCKS BIBLE CONFERENCE

GENERAL:

Glen Rocks Bible Conference is located on part of Lots 34 and 35, Concession IV, Cardwell Ward, Township of Muskoka Lakes on the north shore of Lake Rosseau.

SEWAGE DISPOSAL FACILITIES:

The Conference opened in 1948 using septic tanks and tile beds for sewage disposal. The system failed around 1966. Subsequently, a 0.75 acre seasonal retention lagoon (Ontario Water Resources Commission approval (#66-A-877) was approved in October, 1966.

Special terms and conditions were attached to this approval providing that a discharge would only be permitted during periods of high runoff.

EXISTING CONDITION:

The existing cell is located on the north side of Highway 532 about 1,400 feet from Lake Rosseau.

Sewage from the camp is directed to a series of septic tanks which drain to a centrally located tank from which the sewage is pumped through a 4 inch diameter forcemain to the centre of the lagoon. The system operates as a batch chemically treated and seasonally discharged lagoon.

The design of the inlet structure is such that it cannot be treated and discharged in late fall due to the danger of freezing.

In 1974, the Conference retained a consulting engineer to design a second cell to enable extension of the operation, and to increase the occupancy of the Conference. Approval was given in 1975, (#3-1143-74-756).

The existing cell has a capacity of 1,020,000 Imperial gallons and the proposed cell has a design capacity of 670,000 Imperial gallons giving a combined total capacity of 1.7 million Imperial gallons.

The proposed expansion of the Conference has recently been altered and the approved second cell will not likely be constructed. The development presently being considered will consist of year round accommodation for Senior Citizens, a conference centre with overnight accommodation and restaurant facilities, trailer parking, campsites, and permanent housing for staff.

The existing sewage flows presently constitute about 10% of the proposed development. The proposed sewage treatment facility is designed on the basis of 1,000 persons, and will consist of a mechanical treatment plant and two seasonal retention lagoons with nutrient removal prior to discharge into Lake Rosseau.

SUMMARY:

The existing system is well constructed and operated. The sewage treatment facility for the proposed development is in the design stage. The concept conforms with Ministry requirements.

RECOMMENDATIONS:

None

MILFORD MANOR RESORT

GENERAL:

Milford Manor is located on Part Lot 26 & 27, Concession 10 & 11, Monck Ward, Township of Muskoka Lakes on Milford Bay, approximately 7 miles northwest of the Town of Bracebridge. The resort operates from the end of June until Labour Day with accommodation for about 330 persons.

SEWAGE DISPOSAL FACILITIES:

The resort is served by a combination of septic tanks and tile beds and a one cell lagoon. The buildings connected to the lagoon system have their domestic wastes directed to septic tanks with the effluent being pumped to the lagoon through a 3 inch diameter P.V.C. exposed forcemain.

Effluent disposal from the lagoon was originally by seasonal discharge to a small watercourse which flows into Milford Bay. In 1971, the method of effluent disposal was changed, with the lagoon effluent sprayed onto the golf course property.

EXISTING CONDITION:

During the 1975 operating season, several private well supplies became contaminated as a result of the lagoon operation. Subsequently, on October 15, 1975, a pollution survey was conducted to locate deficiencies in the sewage system.

The main pumping station appears satisfactory with stand-by pumping facilities available. The forcemain developed numerous breaks during 1974, causing raw sewage to be deposited onto surrounding land with some runoff toward Milford Bay.

Resort staff repaired the leaks and regularly inspected the forcemain.

Forcemain leaks occurred again in 1975, contaminating several local well supplies. Initially vandalism was suspected; however, investigation indicated a vacuum in the forcemain was responsible for continual collapsing of the P.V.C. pipe. A special valve has been installed on the line to break the vacuum, and appears to be functioning satisfactorily.

The one cell lagoon was constructed by removing soil off a flat sloped rock used to form the three berms. Debris was not removed from the berms and may be responsible for minor seepage from the facility. All banks are vegetated and stable. The lack of an impervious liner increases possibility of seepage occurring between the bottom of the berms and the flat rock lagoon floor. Surface runoff into the cell exists; however, it may not be a problem unless the lagoon hydraulic capacity is affected.

Effluent from the lagoon flows by gravity down the forcemain to a pumphouse which forces the effluent over the high rock outcroppings to the main pumping station. The effluent is then pumped through three lengths of 3/4 inch open end hoses, which are moved around the golf course periodically. Spray nozzles were used in the past; however, were removed due to clogging problems.

SUMMARY:

The exposed P.V.C. forcemain has split several times, contaminating local well supplies. A vacuum breaker valve has apparently relieved the problem; however, a more permanent solution should be investigated.

Effluent is not spray irrigated onto the golf course; the small diameter open end hoses cause saturation of localized areas.

The effluent is discharged during early spring and/or late fall, and has contributed to local well contamination.

RECOMMENDATIONS:

1. Determine the hydraulic capacity of the lagoon and monitor sewage flows.

2. Consideration should be given to effluent disposal by the batch chemical treatment method, with a controlled discharge over resort property into Milford Bay. This conversion would reduce the possibility of well contamination occuring from the present method of effluent disposal. The accumulation of chemically precipitated suspended solids would also aid in sealing the lagoon interior.

3. A proper spray irrigation system should be provided, if conversion to a seasonal retention operation is not considered.

PAIGNTON HOUSE RESORT

GENERAL:

Paignton House Resort is located on Part of Lots 24 and 25, Concession II, Medora Ward. It is situated on the west side of Lake Rosseau, near the Village of Minett.

The resort is normally open from mid May to mid October and accommodates about 177 persons.

SEWAGE DISPOSAL FACILITIES:

The resort was built in 1891 and started operation two years later using outdoor privies. A septic tank and tile bed system was installed later as the guest capacity of the resort increased. The tile beds failed and as a result, the septic tank effluent was pumped into a swamp.

Ontario Water Resource Commission staff advised the owner to retain a consulting engineer to design a sewage treatment facility as disposal of sewage into a swamp was unacceptable. A two cell lagoon and spray irrigation system was subsequently constructed.

EXISTING CONDITIONS:

The resort recently changed ownership; the new owner has been advised that the system was not formally approved and may not be adequate for future expansion. A consulting engineer was retained by the owner to evaluate the existing lagoon system in terms of capacity and ability to serve the existing resort.

The lagoons are operated on a 60 day minimum retention basis before discharge to the 2 acre spray area. Consequently, one lagoon receives septic tank effluent while the other is either undergoing retention or being emptied.

The forcemain has been enlarged to 3 inches; the 2,000 gallon concrete septic tank has been rebuilt and relocated; and the spray area has been moved from the golf course to a forested area.

The berms have received attention and a fence and warning signs have been placed around both cells. Sewage flows are monitored daily using a calibrated pump timer and records of spray irrigation of treated effluent are maintained. The total capacity of both cells is 0.96 million Imperial gallons at a two foot freeboard.

Since the existing sewage treatment facility was considerably improved, it was given Ministry Approval on April 7, 1975 (#3-0196-75-006) for operation as a spray irrigation system.

During the 1975 operating season, Paignton House submitted an application (#3-1107-75) for the addition of 12 cottage units to the existing system.

SUMMARY:

The consulting engineer's report concluded that the existing sewage treatment facility is adequate to serve the present establishment.

RECOMMENDATIONS:

The addition of the 12 proposed units may have a significant affect on the existing lagoon capacity and spray irrigation area required. This will be reviewed.

Daily sewage flows and records of the effluent disposal operation should be maintained.

CAMP RAMAH IN CANADA

GENERAL:

Camp Ramah is located on the southwestern shore of Skeleton Lake on Lot 41, Concession B, Watt Ward, near the Village of Utterson.

The Camp operates as a summer school for eight weeks during the summer months and accommodates 560 persons.

SEWAGE TREATMENT FACILITIES:

The existing Camp began as a privately owned resort in 1930. Four years later the resort changed ownership and was named Camp Winnebagoe. In 1960, it was purchased by the present owners and renamed Camp Ramah.

The original summer resort operated with a septic tank and tile bed system which functioned satisfactorily until 1962 when several of the tile beds failed. During this period, the guest capacity increased considerably.

EXISTING CONDITION:

At present, there are numerous septic tanks and tile beds in operation. The septic tank effluent from tanks without tile beds is fed into the main pumping station which pumps it to a 0.2 acre lagoon.

Ministry staff became aware of the lagoon operation in April, 1974, when a survey of the sewage disposal facilities was conducted. The survey indicated the tile beds were functioning satisfactorily. The lagoon has an estimated capacity of 270,000 Imperial gallons; however, it is hydraulically overloaded, indicated by a maximum retention period of only 30 days. Camp officials were informed of the situation and retained a consulting engineer to design a proper sewage treatment facility.

PROPOSED SEWAGE TREATMENT SYSTEM EXPANSION:

In order to accommodate the summer sewage flow of 1.5 million Imperial gallons, the consultant proposed a three cell seasonal retention lagoon system (Approval #3-0620-75-766). The existing lagoon will be improved and two additional cells will be constructed in the same area. The site for the two new cells has been cleared and construction will commence as soon as possible in 1976.

A Public Hearing was held before the Environmental Hearing Board on November 3, 1975, to discuss the proposed sewage treatment extension with attention focused on the selection of a discharge route. The Hearing Board's recommendations included the following:

1. The proposed sewage works should be approved subject to the submission of satisfactory plans and specifications.

2. The chemically treated effluent should be discharged by route 2 or 3 with route 3 being the preferred route providing the discharge occurs during the fall drawdown of Skeleton Lake.

   Route 2 involves discharging the effluent to the beach area of Camp Ramah in the proximity of the mouth of Skeleton River.

   Route 3 is the existing route for the present system. The effluent flows in a northerly direction through Camp property just north of the developed area of the Camp. The watercourse then flows into a roadside ditch through the Ministry of Natural Resources Fish Hatchery grounds to Skeleton River which drains Skeleton Lake westward to Lake Rosseau.

3. The operation of the facilities be monitored by the Regional Staff of the Ministry of the Environment.

4. Construction of the lagoons be expedited so that seasonal retention of all wastewater will be provided during the 1976 operating season.

The Camp received approval for expansion of the existing sewage treatment facility January 16, 1976. The new system was approved for seasonal retention operation with discharge of the chemically treated effluent to Skeleton River, downstream from the fish hatchery property.

SUMMARY:

The proposed sewage treatment facility will provide the required hydraulic capacity to enable seasonal retention of all wastewater during the summer months.

The lagoon contents will be chemically treated prior to a controlled fall discharge to Skeleton River during drawdown of Skeleton Lake. Ministry staff will monitor the operation of the sewage treatment facility.

RECOMMENDATIONS:

The owner must complete construction of the additional storage capacity in accordance with the approved engineering design.

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